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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,668	12/27/2005	Yoav Bar-Yaakov	0-05-109	4122

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EXAMINER	
MCCULLEY, MEGAN CASSANDRA	
ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
10/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,668	BAR-YAAKOV ET AL.	
	Examiner	Art Unit	
	Megan McCulley	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/10/2009; 5/11/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

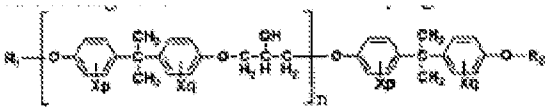
DETAILED ACTION

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

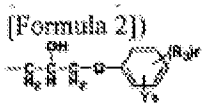
Claims 1, 3, 4, 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claims 1, 3, 6, 7, 8, 9: Nantaku et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



where R1 and R2 can be a glycidyl group or

[Formula 2])



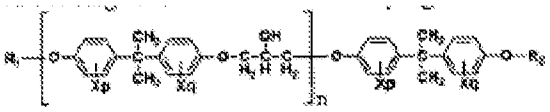
and X and Y can be a halogen (para. 7 page 3). It is made by brominated bisphenol A epoxy, tetrabromobisphenol A and tribromophenol (para. 31 page 7) which would make resins with the bromine in the positions claimed in the formulas of claim 1. Synthetic example 2 (page 7 para. 31) removes the solvent as in example 1 (para. 30). The acid number is 0.3 mgKOH/g (para. 31). If this is only reflective of the residual tribromophenol, the amount of free tribromophenol would be 0.03%. The degree of polymerization is n=22 and the epoxy equivalent is 40,300 (para. 31). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 13872-14534: 526 (end

group) + 600 (middle group) *22 =13726 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 17.2%-18%: 13872 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =17.2% epoxy/mol end groups; 14534 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =18% epoxy/mol end groups. The tribromophenyl ends group would then be 82%-82.8%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II.

Regarding claim 4: Since the composition of flame retardant resins has 17-18% epoxy end groups (see rejection above) and if all of these end groups were found on a compound of formula (I), which has two epoxy groups, the amount of this compound in the composition would be 8.5-9%, which is within the claimed range of 0-10%. If all of these epoxy groups were found on a compound of formula (III), which has one epoxy group, the amount of this compound in the composition would be 17-18%, which is within the claimed range of 0-30%. Therefore, all the ranges are inherently met because if the epoxy groups were found on a mixture of these two compounds, the amounts of the compounds would only decrease and remain within the claimed range.

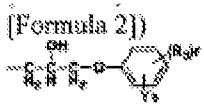
Claims 10 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claim 10: Nantaku et al. teaches a polyamide or a polycarbonate (para. 27) comprising compounds of the formula:



where R1 and R2 can be a glycidyl group or

[Formula 2])



and X and Y can be a halogen (para. 7 page 3). It is made by brominated bisphenol A epoxy, tetrabromobisphenol A and tribromophenol (para. 31 page 7) which would make resins with the bromine in the positions claimed in the formulas of claim 1. Synthetic example 2 (page 7 para. 31) removes the solvent as in example 1 (para. 30). The acid number is 0.3 mgKOH/g (para. 31). If this is only reflective of the residual tribromophenol, the amount of free tribromophenol would be 0.03%. The degree of polymerization is n=22 and the epoxy equivalent is 40,300 (para. 31). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 13872-14534: 526 (end group) + 600 (middle group) *22 =13726 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 17.2%-18%: 13872 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =17.2% epoxy/mol end groups; 14534 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =18% epoxy/mol end groups. The tribromophenyl ends group would then be 82%-82.8%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II.

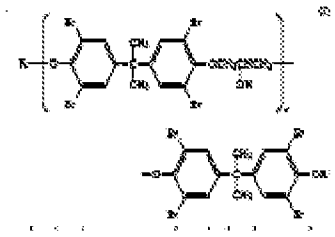
Regarding claim 21: Nantaku et al. further teaches filler (para. 26).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al. (U.S. Pat. 5,250,590) in view of Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claims 1, 2, 3, 6, 7, 8, 9: Nakai et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



where R and R' can be a glycidyl group or  . It is made by bromobisphenol A epoxy and tribromophenol (col. 6 lines 25-30) which would make resins with the bromine in the positions claimed in the formulas of claim 1. While the specific type of bromobisphenol A epoxy is not disclosed, it is inherent that tetrabromobisphenol A is used since there are four bromines on the bisphenol moiety. No solvent is used in the production (col. 6 lines 25-32). The degree of polymerization is n=30 and the epoxy equivalent is 90,000 (Table 1 example 3). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 18672-19334: 526 (end group) + 600 (middle group) *30 =18526 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl

groups. Therefore, the amount of epoxy end groups is in the range of 10.3-10.7%: 18672 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.3% epoxy/mol end groups; 19334 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.7% epoxy/mol end groups. The tribromophenyl ends group would then be 89.7-89.3%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II.

Not disclosed is the acid number or the amount of free tribromophenol content. However, Nantaku et al. teaches a similar composition with an acid number of 0.3 mgKOH/g (para. 31). This would correspond to an amount of free tribromophenol of 0.03% if this number is only reflective of the residual tribromophenol. Nantaku et al. and Nakai et al. are analogous art since they are both concerned with the same field of endeavor, namely compositions of brominated epoxy flame retardants. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the acid number of Nantaku et al. with the flame retardant of Nakai et al. and would have been motivated to do so for such desirable properties as less generation of corrosive gas, as evidenced by Nantaku et al. (para. 19).

While no solvent is mentioned in Nakai et al., if there were any residual solvent in the composition not disclosed in the patent, it would be obvious to remove it as in example 2 of Nantaku et al. At the time of the invention a person having ordinary skill in the art would have found it obvious to remove any undisclosed solvent of Nakai et al. as

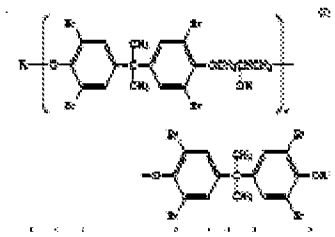
in example 2 of Nantaku et al. and would have been motivated to do so to achieve a solid product, as evidenced by Nakai et al. (example 2).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nantaku et al. (JP 2001-310990) as applied to claim 10 above and in view of Chisholm et al. (US 2001/0009944). Citations to the Japanese document refer to the English translation of the document.

Regarding claim 20: Nantaku et al. set forth the basic claimed composition as set forth above. Not disclosed is a hindered phenol antioxidant. However, Chisholm et al. teaches a polyethylene terephthalate or polybutylene terephthalate (para. 31) based resin comprising brominated polyepoxide flame retardants (para. 47) with a hindered phenol antioxidant (Table 1). Nantaku et al. and Chisholm et al. are analogous art because they are both concerned with the same field of endeavor, namely brominated epoxy flame retardants in PET or PBT resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the hindered phenol antioxidant of Chisholm et al. with the composition of Nantaku et al. and would have been motivated to do so for such desirable properties as radical chain transfer inhibition.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al. (U.S. Pat. 5,250,590) in view of Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claim 22: Nakai et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



where R and R' can be a glycidyl group or  . It is made by bromobisphenol A epoxy/low molecular weight brominated epoxide and tribromophenol at a temperature of 200 ºC (col. 6 lines 25-30) which would make resins with the bromine in the positions claimed in the formulas of claim 1. While the specific type of bromobisphenol A epoxy is not disclosed, it is inherent that tetrabromobisphenol A is used since there are four bromines on the bisphenol moiety as shown in the picture of the abstract. No solvent is used in the production (col. 6 lines 25-32). The degree of polymerization is n=30 and the epoxy equivalent is 90,000 (Table 1 example 3). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 18672-19334: 526 (end group) + 600 (middle group) *30 =18526 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 10.3-10.7%: 18672 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.3% epoxy/mol end groups; 19334 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.7% epoxy/mol end groups. The tribromophenyl ends group would then be 89.7-89.3%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II.

Not disclosed is the acid number or the amount of free tribromophenol content. However, Nantaku et al. teaches a similar composition with an acid number of 0.3 mgKOH/g (para. 31). This would correspond to an amount of free tribromophenol of 0.03% if this number is only reflective of the residual tribromophenol. Nantaku et al. and Nakai et al. are analogous art since they are both concerned with the same field of endeavor, namely compositions of brominated epoxy flame retardants. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the acid number of Nantaku et al. with the flame retardant of Nakai et al. and would have been motivated to do so for such desirable properties as less generation of corrosive gas, as evidenced by Nantaku et al. (para. 19).

While no solvent is mentioned in Nakai et al., if there were any residual solvent in the composition not disclosed in the patent, it would be obvious to remove it as in example 2 of Nantaku et al. At the time of the invention a person having ordinary skill in the art would have found it obvious to remove any undisclosed solvent of Nakai et al. as in example 2 of Nantaku et al. and would have been motivated to do so to achieve a solid product, as evidenced by Nakai et al. (example 2).

The molecular weight of the low molecular weight brominated epoxide is not disclosed. However, Nantaku et al. teaches using a low molecular weight epoxy having a molecular weight of 790 g/mol (example 2 para. 31). At the time of the invention a person having ordinary skill in the art would have found it obvious t use the low molecular weight epoxy of Nantaku et al. in the process of Nakai et al. and would have

been motivated to do so since viscosity is dependent on molecular weight and a low viscosity reactant is easier to mix in the reaction.

Response to Arguments

Applicant's arguments filed June 11, 2009 have been fully considered but they are not persuasive.

A) Applicant's argument that Nantaku et al. does not disclose minimizing corrosion and failure of metallic parts due to the flame retarded polymeric compositions by reducing the content of organic solvent is not persuasive. The composition claimed is disclosed by Nantaku et al. as set forth above. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II.

B) Applicant's argument that Nantaku et al. might have not removed all the solvent to an amount of lower than 100 ppm is not persuasive. Nantaku et al. teaches removing solvent. This is taken to mean the solvent is removed. Speculation on solvent remaining is not germane without evidence that the solvent has not been completely removed. Evidence must be shown that the process of Nantaku et al. to remove solvent inherently does not remove the solvent to the claimed amount in order to rebut this rejection. See MPEP 2145 I and 716.02 (e).

C) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was

within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/M. M./
Examiner, Art Unit 1796